An investigation of ^{154}Eu as a high-precision multi-γ-ray intensity calibration standard for detector arrays.

W. D. Kulp[1], J. L. Wood[1], K. S. Krane[2], J. Loats[2], P. Schmelzenbach[2], C. J. Stapels[2], E. B. Norman[3]

[1] *Georgia Institute of Technology*
[2] *Oregon State University*
[3] *Lawrence Berkeley National Laboratory*

The decay of ^{154}Eu has been studied using γ-ray singles and $\gamma-\gamma$ coincidence spectroscopy with an array of Compton-suppressed Ge detectors. Particular attention to coincidence summing in the analysis, with consideration of detailed decay cascades and angular correlation effects, suggests that previous studies have overlooked necessary corrections. It is concluded that ^{154}Eu provides 26 γ-rays that can be used for relative efficiency calibrations from 120 to 1600 keV at the 0.7% precision level and that this precision could be improved in the future.

Email: david@nuclear.physics.gatech.edu